

by the characters of their teeth, being all heterodont and diphyodont with their dental system reducible to a common formula." I have for many years made use in my lectures of the classification of Mammalia above indicated which may be summarized thus :—

Class MAMMALIA.			
Grade A. MONOTREMA.			
Grade B. DITREMA.			
Branch <i>a.</i> Marsupialia.		Branch <i>b.</i> Placentalia.	
Sub-br. <i>β.</i> Diprotodontia.	Sub-br. <i>α.</i> Polyprotodontia.	Sub-br. <i>α.</i> Typidentata.	Sub-br. <i>β.</i> Edentata.
		Sub-br. <i>γ.</i> Cetacea.	Sub-br. <i>δ.</i> Sirenia.

No doubt it is difficult, even with the use of the additional terms "grade," "branch," and "sub-branch," to set forth the relations to one another of the known orders and sub-orders of Typidentata; but the attempt must be made, and there are materials in the present work for gathering some indications of the form which such a tentative pedigree would take had the authors gone so far as to formulate it.

In the chapter on geographical distribution, the six zoological regions of the globe proposed by Dr. Sclater in 1857 are accepted. But here, as in regard to the treatment of morphological groups, it seems that a primary grouping of the divisions recognized might with advantage be introduced, which would give a truer expression of the historic relations of existing land surfaces than that adopted. Reference is made to the proposed elevation of New Zealand into a primary region, but would not the truth be more nearly expressed by separating New Zealand and the rest of the world first of all, as *Atheriogaëa* and *Theriogaëa*? Should not the Australian region next be separated from the rest of *Theriogaëa*? *Theriogaëa* would then be divided into the *Terra Marsupialium* and the *Terra Placentalium* (without prejudice to the recognition of the occurrence of a limited number of Marsupials in the latter). The *Terra Placentalium* includes the five regions called by Sclater *Palæarctic*, *Nearctic*, *Neotropical*, *Ethiopian*, and *Indian*. The authors of the present work mention Dr. Heilprin's opinion that the *Palæarctic* and *Nearctic* regions should be united and called the *Holarctic* region. But they do not adopt this opinion, nor refer to Huxley's proposal to term this same area *Arctogaëa*, and his suggestive speculations as to the successive connections of the three great peninsulas (as they are at present)—the *Neotropical*, the *Ethiopian*, and the *Indian*—with this northern land surface.

I have ventured to cite one or two instances in which the methods of classification adopted in the "Study of Mammalia" appear to be open to improvement. I trust that I may without offence express a doubt as to what precisely is the meaning of the last part of the following passage :—

"The researches of palæontologists, founded upon studies of casts of the interior of the cranial cavity of

extinct forms, have shown that, in many natural groups of Mammals, if not in all, the brain has increased in size and also in complexity of surface foldings with the advance of time, indicating in this, as in so many other respects, a gradual progress from a lower to a higher type of development."

I confess that I do not understand what this "lower" and "higher type of development" refer to. The remarkable thing about the small brains of extinct Ungulata is that, whilst they differ enormously in relative size and in the low development of other features from the brains of living Ungulates, their possessors exhibited no corresponding difference of skeletal structure; so that it appears that the brain has had an independent evolution, advancing in size and complexity from the initial phase of the primitive Ungulate far further than has the general body-structure. The gap in respect of brain between man and the highest apes, accompanied as it is by mere trivial differences of bodily structure, appears to be a less marked case of the same general phenomenon. We may say that the brain in the one case is in a lower and in the other in a higher stage of development; but whether the authors mean this merely, or that the whole animal has passed "from a lower to a higher type of development," and to what kind of morphological doctrine that phraseology belongs, are matters which do not immediately explain themselves.

The only way to write of so large, so comprehensive, and so authoritative a work as the present, is to point out a few matters for discussion which a rapid review of its pages suggests. Such indications of topics on which one would like to know more from the authors of a book of this kind are not fault-findings, but samples of the interest which it awakens in a sympathetic reader.

E. RAY LANKESTER.

FORTY YEARS IN A MOORLAND PARISH.

Forty Years in a Moorland Parish. By the Rev. J. C. Atkinson, D.C.L. (London: Macmillan and Co., 1891.)

THE moorland parish of which Dr. Atkinson writes is the parish of Danby, which lies among the Cleveland Hills, some miles inland from Whitby. Here he has worked as a clergyman for forty-five years. To a man of narrow sympathies and little intellectual curiosity the position might have been trying enough; but in the life of the people, in the aspects of Nature, and in local problems appealing to the antiquary and the historian, Dr. Atkinson has found sources of interest which have never lost their charm. In the present volume he records some reminiscences of the pursuits which have occupied him, and of the impressions which have been made upon him, during all these years; and a very fascinating record it is. He not only has powers of keen and accurate observation, but carries on his researches in a thoroughly scientific spirit; and he is a master of the difficult art of stating problems in a manner that secures attention while they are being gradually solved. His immediate subject is Danby; but if the author had never raised his eyes to look further afield, his readers might soon have felt that he had told them about as much as they wished to know. Facts relating

to a particular locality can never be really understood unless they are brought into connection with kindred facts in other parts of the world. This is constantly borne in mind by Dr. Atkinson, and his ample learning enables him to apply the principle in many different ways; so that, when he is talking about Danby, he is often talking at the same time about wide regions of the British Islands, and even about stages of culture through which the greater part of the human race has passed.

One of the most interesting of the sections into which the book is divided is the one headed "Antiquarian." In Danby, as in Cleveland generally, there are many pre-historic burial-mounds, and a large number of these he has carefully excavated. The only traces of bronze he has discovered are "a few mouldering fragments of very thin plate, found with the unprotected bones of a cremated body, and not sufficient to fill a very small pill-box half an inch in diameter." Nevertheless, the contents of the larger "houses" prove conclusively that they belong to the Bronze Age; and Dr. Atkinson is of opinion that they date from the later part of the period. He has found many vases of the Bronze Age type, some jet beads, two polished axe-hammers, various bone pins, arrow-heads and other objects of flint; and by far the larger proportion of these treasures may now be studied, along with similar treasures recovered elsewhere, in the British Museum. Dr. Atkinson tells with great spirit the story of the more memorable of his explorations; and he has much that is amusing to say about the wonder excited among his rustic neighbours by what seem to them his mysterious proceedings, and about the interest aroused in the minds of those whom he has from time to time induced to help him. Across the ridges between which lie the dales of the district are ancient earthworks, all of which "are defensive against attack from the south, and in no other direction whatever." Of these dykes, which seem to be of the same period as the burial-mounds, Dr. Atkinson gives a full and lucid account, and he offers some suggestive hints as to their relation to other old fortifications in the neighbourhood. He has also an excellent chapter on various pits which have often been described as the remains of "British settlements." There can be little doubt, as he shows, that in reality these pits are the remains of early mining excavations.

Another valuable part of the book is devoted to folklore. The belief in witches has not even yet wholly died out in Cleveland; and forty years ago it was still a more or less potent factor in the lives of the people. The author gives some curious instances of the power formerly attributed to witches, and of the means by which their devices were supposed to be thwarted by the "wise men" of the district. He suggests that witches may not always have been mere impostors, but that in some cases they may have been able to exercise the kind of influence to which the phenomena of hypnotism are believed to be due. Even more interesting than the traces of faith in witchcraft are the survivals of "fairy," "dwarf," and "Hob" notions. According to a tale told to Dr. Atkinson by an old woman, there was a farm in Gaisdale where Hob, so long as he was not spied upon, did much excellent work at night. At last some one was curious enough to watch him, and it was thought he would be all the better for "something to hap hissel' wiv." Accord-

ingly a coarse shirt, with a belt or girdle to confine it round his middle, was made for him, and left in the barn where he worked. When he found the gift, Hob broke out in the following couplet:—

"Gin Hob mun hae nowgt but a hardin' hamp,
He'll coom nae mair, nowther to berry nor stamp."

Dr. Atkinson was delighted with this couplet, for it preserves three words which had become obsolete forty years ago, and two of which—"berry" and "hamp"—had no actual meaning to the speaker. "Stamp" was the word for "the action of knocking off the awns of the barley previously to threshing it, according to the old practice." "Berry," meaning to thresh, he had been "looking and inquiring for, for years, and looking and inquiring in vain." As to "hamp," he had "never had any reason to suppose that it had once been a constituent part of the current Cleveland folk-speech." The hamp was a kind of smock-frock, gathered in about the middle and falling below the knee, and was at one time the characteristic garment of the English peasant. The word "seems to be clearly Old Danish in form and origin."

There are several chapters which will give pleasure to students of geology and ornithology; and in his notes on weddings, burials, the harvest-home, and holy wells, the author displays much ingenuity in detecting survivals of what were in past times wide-spread customs. In the interpretation of old historical documents, and in the purely descriptive parts of the book, he is equally successful. Some readers, finding so many things to lure them on from the beginning of the work to the end, may be disposed to think that Danby is a very exceptional parish. What is exceptional, however, is not so much the writer's subject as the knowledge and insight which enable him to appreciate, and to make others appreciate, its true interest and significance.

OUR BOOK SHELF.

Anatomy, Physiology, Morphology, and Development of the Blow-fly (Calliphora erythrocephala). Part II. By B. Thompson Lowne, F.R.C.S., F.L.S., &c. (London: R. H. Porter, 1891.)

The general features of this study in insect anatomy have already been noticed (NATURE, vol. xliii, p. 77). Part II. describes the exoskeleton in considerable detail, and contains many useful and elaborate figures. Plate v. and the accompanying explanations give the author's views upon the morphology of the insect-head. The pre-oral part he regards as developed from three bladder-like swellings, to which correspond three primary divisions of the cephalic nerve-centres. The post-oral part is supposed to arise by the fusion of three jaw-bearing segments. The terminal portion of the proboscis is probably developed, according to Mr. Lowne, from the first, and not from the second pair of maxillæ. The description of the mouth-parts is very full, and the figures are extremely good.

The thoracic skeleton is also minutely described, perhaps over-minutely, seeing that, in our author's words, "a classification of the various sclerites indicative of their morphological significance is not possible with our present knowledge." Other careful descriptions by special students show that it is easy to interpret the complex thoracic structures in a different way from that here adopted.

Excellent figures are given of the legs, feet, and wings,